

TESTING NEW ACTINIDE CROSS SECTIONS PROPOSED FOR ENDF/B-VII

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Our Nuclear Theory Group has worked over the last several years to improve the ENDF/B actinide cross sections, especially as measured against the famous series of fast-spectrum critical experiments performed at Los Alamos under such names as Godiva, Jezebel, the Flattops, and Bigten. The new evaluations (see Paper No.153 in this conference for details) include changes in the high-energy fission cross sections, nubar, elastic scattering, inelastic scattering, fission spectra, and delayed neutrons that combine to significantly improve the calculated results for the Los Alamos critical assemblies. As a happy byproduct of this work, we found that the new evaluations also removed about half of a long-standing discrepancy in calculations of thermal-reactor critical experiments using lattices of low-enriched uranium oxide rods. In the meantime, work at the Oak Ridge National Laboratory (see Paper No.66) has resulted in new proposed resonance parameters for U-238. When these low-energy data are combined with the new high-energy data from Los Alamos, they have the effect of removing most of the rest of the problem for thermal lattices. Although more work will be done at both Los Alamos and Oak Ridge, including making the evaluations consistent with the new standards, the results presented in this talk provide promise that ENDF/B-VII will result in good improvements for users at both high and low neutron energies.